Apr 12th, 8:00 AM - Apr 13th, 4:30 PM

2004 Abstract Booklet

Undergraduate Research Center, Minnesota State University, Mankato

Undergraduate Research Conference

Minnesota State University
Mankato

April 12 & 13, 2004

WELCOME

Welcome to the 6th annual Undergraduate Research Conference at Minnesota State University, Mankato. This conference provides an exciting opportunity for the University to showcase the research and creative activity of our undergraduate students. These projects, submitted by 141 students representing four colleges, are the result of collaboration between talented and motivated undergraduate students and their dedicated faculty mentors. This year's conference will again provide a wide array of on-going outstanding scholarly and creative activity on our campus. Abstracts of these oral, performance, or visual arts projects and posters accepted for presentation are contained in this formal publication. I applaud the work of these students and encourage faculty, students and staff to attend the formal presentations that will take place in the Centennial Student Union on April 12 and 13, 2004. The entire University community celebrates the achievements of these outstanding undergraduate students and congratulates all participating students and their faculty mentors.

Richard Davenport
President
Minnesota State University, Mankato

URC PRESENTATION AWARDS

The purpose of judging and awarding is to recognize and promote high-quality research and create activity. Within each oral or poster session, two judges independently rank each presentation, and the mean rank is the final rank. The best presentation in each session receives a "Best Presentation" certificate and a Barnes and Nobel Bookstore gift certificate. Judging of oral presentations is based on delivery and content. Posters are judged while presenters are attending and judges speak with presenters to identify the winner. Judges are graduate students, faculty, or graduate faculty. Judges for each session (one head judge and one assistant judge) are identified by the URC Steering Committee. There are no ties for mean rank; the head judge breaks a tie. The winner is announced at the end of each session. Winners are recognized in the URC online journal.

URC SPECIAL THANKS

Richard Davenport – President
Scott Olson – Vice-President of Academic Affairs
Terrance Flaherty – Dean; College of Graduate Studies and Research
Elaine Lilly – Interim Director; College of Graduate Studies and Research
Sarah Bos – Graduate Assistant of the Undergraduate Research Conference
Moderators and Judges
Barnes and Noble Bookstore

Undergraduate Research Conference Members: Marilyn Hart (Chairman), Barb Bergman, Kimberly Contag, Kathy Hurley, John Krenz, Mark McCullough, Lisa Meyer, Mary Visser, Trenton Vorlicek, and Warren Sandmann

Invited Luncheon Speakers: Ellen Brisch and Michelle Malott - Minnesota State University, Moorhead

Portions of this program are made possible through contributions from:
College of Allied Health and Nursing
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CONFERENCE OVERVIEW

Monday April 12 Schedule of Events

8:00-12:00	**Registration**	Ostrander
8:30-8:40	**Welcome and opening remarks**	Ostrander
8:45-10:15	**Session A** - Psychology	CSU 253
8:45-10:15	**Session B** - English	CSU 284ABC
10:15-10:30	**Coffee Break**	Ostrander
10:30-12:00	**Session C** - Speech Communications	CSU 255
12:15-1:30	***Luncheon*** (Presenters, Mentors, Invited Guests) ***Welcome:*** Dr. Scott Olson, Minnesota State University, Mankato VP of Academic Affairs ***Speakers:*** Dr. Ellen Brisch and Dr. Michelle Malott, Minnesota State University- Moorhead, *"Creating an active learning and instructional block in advanced optical imaging techniques"* ***Closing Remarks:*** Dr. Richard Davenport, Minnesota State University, Mankato, President	Center Ballroom
1:45-3:45	**Poster Session A**	CSU 253/254/255
1:45-3:15	**Session D** - Biology, Auto Manufacturing Engineering Technology, and Environmental Science	Ostrander
1:45-2:15	**Session E** - Performance Arts	PA 110

Tuesday April 13 Schedule of Events

8:15-11:30	**Registration**	Ostrander
8:45-10:15	**Session F** - Speech Communications and English	CSU 255
8:45-10:15	**Session G** - History, Anthropology, Sociology, and Modern Languages	CSU 253
10:15-10:30	**Coffee Break**	Ostrander
10:30-12:15	**Session H** - Biology, Chemistry, Math & Statistics	CSU 253
10:30-12:15	**Session I** - Computer and Information Science	CSU 255
12:15-12:45	**Lunch** (on your own)	
12:45-2:45	**Poster Session B**	CSU 253/254/255
12:45-2:15	**Session J** - Women's Studies, Art, Theatre, and Mass Communications	Ostrander
2:30-4:30	**Session K** - Performance Arts	CSU 284ABC

TABLE OF CONTENTS

Monday April 12 Presenters

8:45-10:15 A.M. **Session A** **CSU 253**

Psychology

Moderator: Edison Perdomo

Rebecca Gilbertson (E. Perdomo) "The Use of Deception to Avoid Conflict in Relationships"

Jeremy Husfeldt (E. Perdomo) "The Role of Population Size on the Development of Work Ethic and Success in School"

Samantha Ortman (E. Perdomo) "Effects of Homesickness on Student Well-Being and their Potentional Success in College"

Jennifer Rye (E. Perdomo) "The Effects of Feedback on Creativity"

Matthew Stanton (E. Perdomo) "Distinguishing Observed Inatterntive Behaviors in the College Classroom as they Correlate to Brain Wave Activity Utilizing a Wireless Electroencephalograph"

Hang Wu (E. Perdomo) "Correlation Between Health and Stress"

THE USE OF DECEPTION TO AVOID CONFLICTS IN RELATIONSHIPS

Rebecca Gilbertson (Psychology)
Edison Perdomo, Faculty Mentor (Psychology)

The current study examined the role of deception in conflict avoidance. In particular this study investigated the range of deception devices (e.g. lying, half-truth, distorting the truth, white lie, failed deception, and omission of the truth) utilized in relationships such as acquaintanceships, dating, and marriages. In addition, this study examined how destructive and dishonest deception can be in a relationship. Findings from this study suggested that some forms of deception are more common than others and that men are more likely to use some form of deception than women.

THE ROLE OF POPULATION SIZE ON THE DEVELOPMENT OF WORK ETHIC AND SUCCESS IN SCHOOL

Jeremy Husfeldt (Psychology)
Edison Perdomo, Faculty Mentor (Psychology)

A number of studies have suggested that a person's attitudes and beliefs concerning work ethic is a function of their environment. Consequently, it would seem likely that someone raised in a rural environment could be significantly different from someone raised in an urban environment regarding their value of work. Studies have also been done showing that the endorsement of work ethic by college students is linked with increased studying, while studying has been correlated with higher grade point average (GPA). As a result, 50 college students were given a work ethic assessment and asked to state their GPA and size of their hometown's population. Results from this study indicate that there is a difference between rural and urban students relating to work ethic endorsement and GPA.

EFFECTS OF HOMESICKNESS ON STUDENT WELL-BEING AND THEIR POTENTIAL SUCCESS IN COLLEGE

Samantha Ortman (Psychology)
Edison Perdomo, Faculty Mentor (Psychology)

This study examined the causes and effects of homesickness on undergraduate students. Subjects were asked to fill out the Student Adaptation to College Questionnaire (SACQ). This questionnaire assessed how well students are adapting to the demands of the college experience. It provided a score for academic adjustment, social adjustment, personal emotional adjustment, and attachment. Subjects, who reported a positive home life before starting college, had higher levels of homesickness than their counterparts. Levels of dependency are also a good predictor of homesickness. Students with poor social skills also had high levels of homesickness. There were no links between the sex of the subject and levels of homesickness.

THE EFFECTS OF FEEDBACK ON CREATIVITY

Jennifer Rye (Psychology)
Edison Perdomo, Faculty Mentor (Psychology)

The purpose of this study was to examine whether feedback on the results of a creativity test influences behavior. There were 20 males and 20 females that participated. The participants were divided into two groups; one group of randomly assigned students received positive feedback about their creativity level. While, the second group received negative feedback. Participants were then asked to perform a task, which was dependent on creativity, and were asked to rate the task, based on their own perceived sense of creativity. Students who received the positive feedback were more likely to rate their task higher than the students who received negative feedback.

DISTINGUISHING OBSERVED INATTENTIVE BEHAVIORS IN THE COLLEGE CLASSROOM AS THEY CORRELATE TO BRAIN WAVE ACTIVITY UTILIZING A WIRELESS ELECTROENCEPHALOGRAPH

Christopher J. Aura & Matthew R. Stanton (Psychology)
Edison Perdomo, Faculty Mentor (Psychology)

A significant amount of research has been devoted to the behavioral correlates of inattention in children. Utilizing a well-developed index, teachers and instructors can accurately gauge the attention level of their students in their classrooms allowing valuable feedback in their development of effective lesson plans. College students, in their several years of experience, are much more capable of masking these trademark behaviors. Often when a children lose interest, they will begin to openly look around the room, wiggle in their seat, or chat with their neighbors; college students, however, are likely to candidly fidget, shift in their seat, or even maintain eye contact with their instructor while daydreaming. Therefore, an additional aid is required to better assess inattentive periods. Given the invasive nature of past devices commonly used, such as the Electroencephalograph (EEG), accurate measurement proved to be very difficult in a natural setting. This study used a modified version of the EEG called the Attention Trainer (AT). This device is unique in that it focuses solely on the areas of the brain associated with attention including the reticular formation, basal ganglia, and parts of the frontal cortex. Not only smaller in size, the AT is wireless thus alleviating distraction and allowing more reliable field assessment. Using the AT to distinguish periods of inattention, several hypothesized behaviors were significantly correlated with inattentive brain wave patterns. While further research is needed to validate these results, distinguishing these behaviors should allow professors more accurate feedback on the effectiveness of their lectures.

CORRELATION BETWEEN HEALTH AND STRESS

Hang Wu (Psychology)
Edison Perdomo, Faculty Mentor (Psychology)

This study examined participants' level of stress and their perceived level of stress and success in school. The subjects were given the stress questionnaire in order to determine the level of stress they were experiencing and the frequency of health issues experienced during the previous year. The results of the study suggest that although level of stress may be similar between individuals, how they perceived the stress impacted their health level. Students who perceived the stress in a negative fashion were more likely to be sick than individuals who were less impacted by the stress. By identifying the correlation between health and stress, the study aimed to suggesting ways to minimize the negative impacts of stress to students.

English

Moderator: Tara Mogahadam

Alison Broderson, Andrea Bruton, Eric Groonwald, Amy Herron, Eric Hoffeiser, Josephine Jarvis, Joe Loweth, Amanda Nigon, Jenny Sodomka (R. Robbins)
"Losing Innocence"

LOSING INNOCENCE

Alison Broderson, Andrea Bruton, Eric Groonwald, Amy Herron, Eric Hoffeiser
Josephine Jarvis, Joe Loweth, Amanda Nigon, Jenny Sodomka (English)
Richard Robbins,, Faculty Mentor (English)

This project was inspired by our group's desire to heighten its social awareness as it explored the loss of innocence resulting from impoverishment. As creative writers we chose to explore this theme through poetry, fiction, and creative non-fiction—our subjects ranging from working in a women's shelter to college life. Because the process of writing is one of investigation, we developed a deeper understanding of the loss of innocence and a broader interpretation of the meaning of impoverishment, choosing in advance to not limit ourselves to an economic interpretation of the word. We attained our goals through observation, discussion, information gathering, writing, and revision of creative work, meeting frequently to discuss our work and ideas. We strove to bring each individual piece to a publishable quality and plan to submit our works for publication. In the hopes that others will gain from our awareness, we plan to present our writing at the conference, individually reading our work to the audience.

Speech Communications

Moderator: Brain Klosa

Monique Chenier (B. Klosa) "A Literary Analysis of the Modern Hero's Quest"

Erin Hebert (B. Klosa) "I Just Can't Wait to be King: An Analysis of the Hero's Quest in the film The Lion King"

Heather Kaiser (D. Cronn-Mills) "An Examination of Campustruth Advertisements: Are they Legitimate?"

Ali Khokhar (B. Klosa) "Hero's Quest: An Analysis of Heros Throughout Time"

Megan Kikalos (B. Klosa) "The American People's Response to a New Look for George W. Bush"

Rebecca Rick (B. Klosa) "Student Activity Fees: Their Uses and Misuses"

A LITERARY ANALYSIS OF THE MODERN HERO'S QUEST

Monique Chenier, Nicolette Anderson, Patrick Cook, Jon Surdo (Speech Communication)
Brian Klosa, Faculty Mentor (Speech Communication)

The hero quest story is a common element of myth found in many stories. While the basic formula has stayed the same throughout time, the formula has been altered to adapt with modern literary and mythic themes. The following oral reader's theatre group presentation will incorporate various modern texts to analyze the modern hero's quest. This presentation will show how classical theory can adapt to contemporary times.

I JUST CAN'T WAIT TO BE KING: AN ANALYSIS OF THE HERO'S QUEST IN THE FILM THE LION KING.

Erin Hebert, Philip Kramer, David Brennan, Lianna Erickson (Speech Communication)
Brian Klosa, Faculty Member (Speech Communication)

"Disney's The Lion King is one of the most successful animated films of all time. While the film is entertaining, the film also appeals to audiences due to the development of the hero's quest within the storyline. Utilizing research and theories related to the hero's quest combined with examples from the film, original story and critical reviews, this oral reader's theatre group presentation will display how the hero's quest helps to make the Lion King a popular and critical success.

AN EXAMINATION OF CAMPUSTRUTH ADVERTISEMENTS: ARE THEY LEGITIMATE?

Heather Kaiser (Speech Communication)
Daniel Cronn-Mills, Faculty Mentor (Speech Communication)

In the fall of 2002 Campustruth started placing anti-Arab and anti-Muslim advertisements in campus newspapers across the nation. According to their mission statement at Campustruth.org, Campustruth claims to be a group of Americans from all faiths, who accept diversity of opinions, and believe in truth and accuracy. Yet its ads display a contradictory message as they clearly target Arabs as adversaries. Perhaps what it should say is all faiths...except Islam. Analysis of these ads is vital for the following reason: our nation has always been a mixture of cultures, and with the mixture has always come dissenting opinions; the level of dissent, however, is aggravated and perpetuated by advertisements like those from Campustruth. The organization presents opinion as fact. Thus we must ask, do Campustruth's advertisements have legitimacy, despite the irony in its organization? In order to analyze Campustruth's ads we will utilize Angela Trethewey's article "Isn't it Ironic: Using Irony to Explore the Contradictions of Organizational life," found in the Spring 1999 *Western Journal of Communication.* Trethewey's theory is appropriate because it evaluates the irony created by organizations to justify contradictions in their messages.

THE HERO QUEST: AN ANALYSIS OF HEROS THROUGHOUT TIME

Ali Khokhar (Speech Communication)
David Nadolski (Speech Communication)
Kathleen Crawford (Speech Communication)
Brian Klosa, Faculty Mentor (Speech Communication)

A popular adage states "history repeats itself." This adage has been used to analyze various historical, societal and cultural trends. This reasoning can also be applied to literary themes. The repetition of similar motifs from classical to contemporary stories can be found repeating itself. One common motif is the hero quest story. In our reader's theatre group oral presentation an explanation and analysis of the elements of the hero quest will be provided. This presentation will explain how identical concepts and themes of the hero quest can be found in numerous stories throughout time.

THE AMERICAN PEOPLE'S RESPONSE TO A NEW LOOK FOR GEORGE W. BUSH

Megan Kikalos (Speech Communication)
Brian Klosa, Faculty Mentor (Speech Communication)

Through the years of his presidency, George W. Bush has been represented in many different ways, from satirical television, and movies to political cartoons. With each representation, there have been reactions from the American people. The latest representation is an action figure of the president, which has gotten responses from the American people. As people studying the many issues of communication, we must analyze the responses by asking the following research question: Does the introduction of the George W. Bush action figure help or hurt the president's credibility? To answer this question, I will use Kenneth Burke's epic and burlesque frames of communication. The epic frame refers to the positive viewpoint of a social situation, and the burlesque frame refers to the negative viewpoint of a social situation. After I have discussed Burke's two frames, we will look at the American people's perception of the action figure, and then we will examine implication on a social behavior to answer the question given above.

STUDENT ACTIVITY FEES: THEIR USES AND MISUSES

Rebecca J. Rick (Speech Communication)
Brian Klosa, Faculty Mentor (Speech Communication)

Student activity fees are a basic part of college attendance. However, most students do not understand what they are and where they are going. Through information collected from the Minnesota State Colleges and Universities website as well as various articles from newspapers this piece examines what student activity fees are, some of the places this money is going and weight the advantages and disadvantages of student activity fees and even some of the reasons why some students feel they are unconstitutional.

Biology, Auto and Manufacturing Engineering Technology, and Environmental Science

Moderator: Steven Mercurio

Eddie Kalombo (S. Mercurio) "Determination of the Liver and Fill Pathogenesis of 12alpha-ethynylestradiol as a Function of Nitrite Concentration and Reversal by Tamoxifen in the Rainbow Darter (*Etheostoma Caeruleum*)"

Mark Halbert (B. Jones) "Analysis of an E-85 Turbo Four-Stroke Snowmobile"

Michelle LaRue (B. McMillan) "Chronic Wasting Disease in Minnesota: Current Status and "Vulnerable" Populations"

Scott Haase (A. Goebel) "Economic Analysis of Small Scale Biodiesel Production"

Jenny Mocol (B. Proctor) "Impact of a Golf Course on Macroinvertabrate Populations"

DETERMINATION OF THE LIVER AND GILL PATHOGENESIS OF 17ALPHA-ETHYNYLESTRADIOL AS A FUNCTION OF NITRITE CONCENTRATION AND REVERSAL BY TAMOXIFEN IN THE RAINBOW DARTER (*ETHEOSTOMA CAERULEUM*)

Eddie Kalombo (Biological Sciences)
Steve Mercurio, Faculty Mentor (Biological Sciences)

Rainbow darters were studied since they are a sexually dimorphic Minnesota fish species that are intolerant of water pollution (possibly including endocrine disruptors). They were exposed to ethynylestradiol (synthetic estrogen used in medications) at concentrations which are likely found in sewage from cities with regional medical centers such as Rochester and Mankato to see how disrupting their hormonal environment affects their response to other prevalent pollutants in the water. For example, high concentrations of nitrates and nitrites in water, originating from human or animal wastes, are known to cause gill and liver damage in fish. Additionally, the overproduction of a female ovarian protein (vitellogenin) by the liver of estrogen-treated fish is known to affect the nitrogen balance of various species of animals. Female and male darters were exposed to nothing (control), 0.002% ethanol (solvent control) or 200 ng/L 17α-ethynylestradiol (estrogen effect) for 21 days. Tamoxifen, an inhibitor of the estrogen receptor, was put into tanks containing estradiol at concentrations of 2-20,000 ng/L to attempt to reverse any estrogenic effect. Nitrite concentrations in the tanks increased with estrogen in either sex, but tamoxifen only reversed this increase in female fish in a concentration-dependent manner. Tissue sections stained for the presence of protein will be presented showing all alterations in the liver and gill function due to estrogen and increasing nitrite concentrations and those reversed by tamoxifen. These results are significant because no one has linked increased sensitivity of fish to nitrates from fertilizer runoff or human waste in sewage to endocrine disruption by estrogen in fish.

ANALYSIS OF AN E-85 TURBO FOUR-STROKE SNOWMOBILE

Mark Halbert (Automotive Engineering Technology)
Reed Hanson (Automotive Engineering Technology)
Bruce Jones, Faculty Mentor (Automotive Engineering Technology)

The project concerns the Minnesota State University Mankato Automotive Engineering Technology Program's entry to the 2004 Clean Snowmobile Challenge. Included in this presentation is the snowmobile model chosen for modification, engine choice, modifications applied, methods used, modification results affecting performance, emission control, noise reduction, production cost, durability, fuel efficiency, safety, and rider comfort. The MSU Mavericks devoted their main focus for the 2004 Clean Snowmobile Challenge to a turbo charged Polaris 683cc four-stroke was tested. The engine was tested for emissions, noise, and performance; these test results were then analyzed for advantages and disadvantages.

Performance

Moderator: TBD

Sean Johnson (S. Bomgardner) "French Mélodie: A Look Into the Past"

FRENCH MÉLODIE: A LOOK AT THE FORGOTTEN

Sean Johnson (Music)
Stephen Bomgardner, Faculty Mentor (Music)

American music students rarely study French music. Musicians in America have a tendency to study the Italian, German and English composers, leaving a wide range of beautiful music unexposed. This project will reveal a neglected art form through its style, language and history. A partial performance will be included in this presentation.

Teresa-Thuy Le (T. Salerno) "Study of Vegetative Soybean Lipoxygenases"

Huda Ahmed (P. Knoblich) "Histological Evaluation of the Cryo-Destruction of the Zona Glomerulosa (outermost layer) of the Adrenal Cortex"

Anne Barnes (B. Groh) "Optimal Precipitation of Organotin Fluorides by Cation Exchange and Subsequent Conversion to Organotin Chlorides"

Jeffrey Bartz and Ben Dalsing (J. Wilde) "Development of Lightweight, Floatable Concrete"

Aja Bjerke (M. Hart) "Identification of Interacting Proteins Via A Yeast Genetic Screen"

Chris Buyarski (C. Ruhland) "Assessment of Ferric-Reducing/Antioxidant Power in the Foliage of Several Tree Species"

Jill Carey (P. Hargrove) "Linguistic Analysis of Intraconversational Narratives of Speakers with Williams Syndrome and their Typically Developing Peers"

Molly Chermak (B. Proctor) "Selectivity of Two Different Artificial Substrates in Collecting Macroinvertabrates"

Melissa DeWilde (E. Perdomo) "Effects of Academic Achievement and Gender on Self-Esteem"

Daniel Dorff (D. Friend) "Paleiofluvial Study of Lower Cretaceous River Beds in Utah"

Amber Elzen (Y. Lee) "Political Attitudes Towards the Bush Administration by Ethnic and Racial Groups"

Ayokosok Enow (T. Salerno) "Characterization of Lipoxygenases from Soybean Leaves and Stems"

Brittney Harthaus (M. Hart) "Quantifying the Immunoreactivity of Polyclonal IgG and IgY"

Angela Johnson and Derek Skillings (R. Sorensen and M. Bentley) "Preparation of Echinostomes for Collar Spine Analysis with Scanning Electron Microscopy"

Andy Monson (S. Kipp) "Rotational Periods of Asteroids"

STUDY OF VEGETATIVE SOYBEAN LIPOXYGENASES

Teresa-Thuy Le (Chemistry and Geology)
Theresa Salerno, Faculty Mentor (Chemistry and Geology)

Lipoxygenases are a class of iron-containing enzymes that allow for the hydroperoxidation of polyunsaturated fatty acids. Seed lipoxygenases in soybeans have been purified and well characterized. Plants are also known to have vegetative leaf lipoxygenases. These are not as well characterized because they are not as abundant as their seed counterparts. They are thought to have roles in plant growth and development, in the synthesis of plant regulatory molecules, and in the defense systems of plants against pests and pathogens. The general objective of this study was to analyze soybean leaf lipoxygenases. The specific objectives of this study were to investigate differences in type and amount of leaf lipoxygenase activity as a function of age and strain type and to investigate the effect of extraction conditions on the relative activities of these leaf soybean lipoxygenases. Two sets of soybean seed strains representing control and seed lipoxygenase-free strains are being used. The techniques and procedures of this experiment include isolation of the lipoxygenases from the soybean leaves, separation of the lipoxygenases on an isoelectric focusing gel, specific activity staining-specific visualization of lipoxygenases and analysis of relative amounts of LOX enzyme using a densitometer. Initial studies indicate differences in LOX patterns in the different strains.

HISTOLOGICAL EVALUATION OF THE CRYO-DESTRUCTION OF THE ZONA GLOMERULOSA (OUTERMOST LAYER) OF THE ADRENAL CORTEX

Huda Ahmed (Biological Sciences)
Jonida Pone (Biological Sciences)
Penny Knoblich, Faculty Mentor (Biological Sciences))

The outer portion, or cortex, of the adrenal gland produces three hormones, two of which are highly critical to normal function. The cortex itself is divided into three layers, each responsible for a certain hormone synthesis. The outermost layer (zona glomerulosa) produces aldosterone, a hormone involved in the regulation of body sodium, blood volume, and blood pressure. The middle layer produces cortocosterone, a hormone involved in a variety of biological functions, and necessary for life. Due to its effects on blood volume, aldosterone has been implicated in the development of hypertension, or high blood pressure. Aldosterone has been studied through the use of receptor blocking agents, which are associated with undesirable side effects, and complete adrenalectomy (removal of both adrenal glands), which eliminates both aldosterone and corticosterone. The overall objective of the current study is to produce a surgically induced low aldosterone rat model, with functioning lower adrenal layers, by cryo-destruction of only the zona glomerulosa The present study histologically evaluated the success of the cryo-destruction. Adrenal glands were removed from rats 2, 4, and 8 weeks after cryo-destruction of the left adrenal zona glomerulosa. Glands were fixed in paraffin, sectioned, stained, and viewed under a microscope. Presence or absence of each of the three layers of the adrenal cortex were determined. We hypothesized that the cryo-destruction will have eliminated, or nearly eliminated the outermost layer of the adrenal gland, while conserving the structural and functional integrity of the lower layers.

OPTIMAL PRECIPITATION OF ORGANOTIN FLUORIDES BY CATION EXCHANGE AND SUBSEQUENT CONVERSION TO ORGANOTIN CHLORIDES

Anne Barnes (Chemisty)
Brian Groh, Faculty Mentor (Chemisty)

Halogenated organotin compounds account for 10% of tin consumption worldwide. Known for their biocidal activity, organotins are components of agricultural fungicides, antibiotics and paint preservatives. Organotins have wide application and use in academic research as well as in industry. However, highly toxic halogenated organotins, often formed as by-products in reactions, present an ecological threat to the environment. The by-product, typically formed in quantity equal to the desired product, usually becomes part of the chemical waste stream. The focus of this research is to develop a process to separate, remove and recycle organotin halides, specifically tributytin chloride, bromide and iodide (Bu_3SnCl, Bu_3SnBr, and Bu_3SnI respectively). This involves precipitation of the tin halide as tributyltin fluoride (Bu_3SnF), filtration to isolate the tin fluoride and a simple reaction to convert it back into a useful reactant, tributyltin chloride. This process will benefit industry and academic research labs in two ways, (a) it will provide a simple and effective method for the separation of organotin halides from a reaction product mixture; (b) it will provide a cost efficient way to reduce the chemical waste stream, which directly benefits the environment.

DEVELOPMENT OF LIGHTWEIGHT, FLOATABLE CONCRETE

Jeff Bartz (Civil Engineering)
Ben Dalsing (Civil Engineering)
W. James Wilde, Faculty Mentor (Civil Engineering)

This study involved developing and testing various concrete mixes to use in the construction of a concrete canoe. The canoe will be raced in competition; therefore, the aspects of design focus heavily on minimizing the weight of the concrete. The goal of this project is to develop concrete that is close to the unit weight of water so that it will float and, at the same time, maintain a high strength. The testing involved strength, weight, and permeability for each mix developed. The unit weight of the concrete was reduced by using lightweight aggregate instead of rock and gravel. The lightweight aggregate that was used includes plastic beads and glass bubbles. Permeability was also considered to ensure that water would not seep through the concrete.

IDENTIFICATION OF INTERACTING PROTEINS VIA A YEAST GENETIC SCREEN

Aja Bjerke (Biological Sciences)
Noah Sutton (Biological Sciences)
Marilyn Hart, Faculty Mentor (Biology)

Actin, a component of all eukaryotic cells, contributes to cell motility, shape and organization. In striated muscle, actin capping protein (CP) binds to the barbed end of the actin filament at the Z-line, directing and maintaining proper organization. CP is a heterodimer composed of alpha and beta subunits. Three isoforms of the beta subunit have been identified: beta1 (β1), beta2 (β2), beta3 (β3). The beta isoforms are produced via alternative splicing of one gene and share 90% sequence identity. Previous studies revealed that the beta isoforms have distinct localizations in cardiac myocytes with β1 localizing to the Z-line and β2 localizing to the cell periphery and intercalated discs. In transgenic studies, the β1 isoform was unable to functionally replace the β2 isoform and vice-versa. These studies suggest that the unique function of the beta isoforms may be due to interactions with additional cellular components. The purpose of this research is to identify proteins that interact with the β1 and β2 isoforms of actin CP using a yeast two-hybrid genetic screen. The genetic screen relies upon identifiable gene expression induced by protein interactions. The necessary plasmid constructs have been generated and their orientations confirmed. Western blot analysis revealed that the constructs express the β1 and β2 proteins. A small scale preliminary screen is underway.

ASSESSMENT OF FERRIC-REDUCING/ANTIOXIDANT POWER IN THE FOLIAGE OF SEVERAL TREE SPECIES

Christopher R. Buyarski (Biological Sciences and Environmental Sciences)
Christopher T. Ruhland, Faculty Mentor (Biological Sciences)

Recently considerable attention has been given to the presence of non-enzymatic antioxidant compounds present in plant foliage. Carotenoids (xanthophylls + carotenes) have been identified as a class of compounds that have antioxidant abilities. New evidence suggests that phenylpropanoids (hydroxycinnamic acids + flavonoids) may also play a role in oxygen free-radical scavenging. The Ferric-Reducing/Antioxidant Power (FRAP) assay was used to examine these oxygen-reducing compounds in the foliage of ten tree species. The FRAP assay is a rapid and direct test that has been used primarily to quantify the capability of non-enzymatic antioxidants in animal systems and has rarely been used for plants. Foliage from five coniferous (*Juniperus virginiana, Pinus sylvestris, Picea pungens, Thuja occidentalis* and *Ginko biloba*) and five deciduous (*Rhamnus catharticus, Acer saccharum, Fraxinus pennsylvanica, Robinia pseudoacacia* and *Quercus rubra*) species was examined. Soluble carotenoids and phenylpropanoids were extracted from foliage in a methanol solution. Concentrations of these compounds were measured spectrophotometrically and FRAP assays performed on these extracts. There was a significant positive correlation ($P \leq 0.05$) observed between concentrations of soluble phenylpropanoids (assessed at 300 nm) and FRAP values in *T. occidentalis, A. saccharum* and *F. pennsylvanica.* In addition there was a weak, but significant ($P \leq 0.10$), positive relationship observed between these two variables across all species and was strongest for the deciduous lifeform ($P \leq 0.05$). These results suggest that phenylpropanoid concentrations may play an important role in the scavenging of oxygen free-radicals in the foliage of some tree species.

LINGUISTIC ANALYSES OF INTRACONVERSATIONAL NARRATIVES OF SPEAKERS WITH WILLIAMS SYNDROME AND THEIR TYPICALLY DEVELOPING PEERS

Jill Carey, Cassandra Tepe, April Lundberg, Heather Hannigan, Amanda Sigler, Leisa Schmidt, Ann Schimmel, Melia Danielson, Amy Kruse, Margaret Kaufmann, Brianne Linaman (Department of Speech, Hearing, and Rehabilitation Services)
Patricia Hargrove, Faculty Mentor (Department of Speech, Hearing, and Rehabilitation Services)

This study examined several linguistic characteristics of stories within conversations (intraconversational narratives) of speakers with Williams syndrome and their typically developing (age matched) peers. (Williams syndrome is a genetic disorder generally accompanied by specific physical characteristics, developmental delay, and unique communication skills.) Trained judges transcribed audiotapes of the stories and then collected and analyzed four measures: frequency, antecedent events, content, and form. The antecedent events yielded the only significant differences with the speakers with Williams syndrome using independent narratives more frequently and the typically developing speakers using dependent narratives more frequently. This suggests that speakers with Williams syndrome are more likely to speak "off topic." However, for the most part, the intraconversational narratives of speakers with Williams syndrome appear similar to those of their typically developing peers.

SELECTIVITY OF TWO DIFFERENT ARTIFICIAL SUBSTRATES IN COLLECTING MACROINVERTEBRATES

Molly Chermak, Alicia Hachfeld, Jenny Mocol and Jesse Neyens (Biological Sciences)
Beth Proctor, Faculty Mentor (Biological Sciences)

As part of the Rush River Assessment Project, benthic macroinvertebrates (organisms without a backbone that live in water and are visible with the naked eye) were collected from 8 locations using Hester-Dendy and Brick-Scrubby artificial substrates. The sampling sites were in watersheds that varied greatly in land use, vegetation, and topography and water quality. When sampling macroinvertebrates usually only one type of artificial substrate is used. The purpose of our research was to determine if there were major differences between the number and type of macroinvertebrates colonizing the two different types of artificial substrates at the various sampling sites. The substrates were set out and collected three times from May - August 2003. The colonization period ranged between 5-6 weeks. There were appreciable differences in the type and number of macroinvertebrates that colonized the two different artificial substrates at the different sites.

EFFECTS OF ACADEMIC ACHIEVEMENT AND GENDER ON SELF-ESTEEM

Melissa DeWilde (Psychology)
Edison Perdomo, Faculty Mentor (Psychology)

Many studies regarding self-esteem focus only on elementary and high school students. The present study was conducted on college students and focused on the relationship between self-esteem, grade point average and gender. The study involved the use of two questionnaires; the *Rosenberg Self-Esteem Assessment Survey* was used to measure self-esteem and a demographic questionnaire was used to obtain information about the participants. Results found that students with the highest self-esteems are those with the highest grade point averages. Students with lower grade point averages had lower self-esteem. Overall, females had lower self-esteems than males, regardless of grade point averages which is also consistent with previous research. These findings support some earlier research regarding elementary and high school students that the higher the grade point average, the higher the self-esteem.

PALEOFLUVIAL STUDY OF LOWER CRETACEOUS RIVER BEDS IN UTAH

Daniel Dorff (Earth Science)
Donald Friend, Faculty Mentor (Geography)

This study involved researching Cretaceous period (144-66 Ma) channel-fill deposits of the Cedar Mountain Formation in present day Utah. At many sites throughout Utah lithofacie descriptions, paleocurrents, and clast size counts were mapped and recorded in an effort to gain a further understanding of how the Sevier orogeny (mountain building episode) influenced the morphology of rivers along with their direction of flow. The direction was determined by the paleocurrents, while the distances of sites from the Sevier orogeny were determined by the size and angularity of the pebbles. Using the density and angularity of the pebbles we determined which were locally derived and which were transported in the rivers. It is our conclusion that the streams went from the Sevier orogeny, the present day Rockies, toward the Western Interior Seaway, the present day Great Plains.

POLITICAL ATTITUDES TOWARDS THE BUSH ADMINISTRATION BY ETHNIC AND RACIAL GROUPS

Amber Elzen (Ethnic Studies)
Mai Inoue (Ethnic Studies)
Julianna Koomen (Ethnic Studies)
Yueh-Ting Lee, Faculty Mentor (Ethnic Studies)

Political constituencies affect the federal government and its policies. In return, these constituencies are also impacted themselves by the administration and the policies it creates in a sort of political cycle (Lee, 1993). These constituents should be aware of how particular governmental policies may directly or indirectly impact them at a personal level or at a national level through their common populations. This project primarily analyzes the political responses of various ethnic and racial groups about the Bush administration and its policies, but also to a lesser extent, the different responses when examined by age and/or gender. It is hypothesized that Caucasians will have a more positive outlook on the administration and its policies while racial and ethnic minorities will be seen to have less positive responses to the questions asked. Overall, approximately 220 participants were surveyed from classrooms of the Ethnic Studies Department of Minnesota State University, Mankato and from the local communities of the researchers through questions asking them to indicate their support for the war with Iraq, certain policies that the Bush administration had made or proposed to put into action and on the Bush administration itself. When each question was analyzed singly, a significant difference was shown between the various ethnic and racial groups in two-thirds of the questions asked. This data supports the hypothesis that the racial/ethnic majority (Caucasians) would more strongly support the Bush administration and its policies when compared to racial and ethnic minorities.

CHARACTERIZATION OF LIPOXYGENASES FROM SOYBEAN LEAVES AND STEMS

Ayokosok Enow (Chemistry and Geology)
Theresa Salerno, Faculty Mentor (Chemistry and Geology)

Lipoxygenases (LOX) are biological enzymes collectively called dioxygenases and they catalyze the peroxidation (addition of molecular oxygen) of fatty acids. LOX enzymes use linolenic acid and linoleic acids as their substrates. The characterization of soybean seed LOX enzymes has been extensively studied, but few studies on the Leaf LOX enzymes have been done. The purpose of this study is to characterize and compare LOX enzymes from leaves and stems from soybeans and specifically to determine if seed LOX-free strains have different leaf and stem LOX enzymes. The characterization will include quantitative and qualitative analysis of these enzymes. These enzymes will be identified based on differences in their isoelectric point (pI) values. Five strains of soybean plants were grown for 7 days after germination. On the seventh day, stems and leaves were harvested and the LOX enzymes were extracted, and separated by charge using Isoelectric Focusing gels. Specific activity staining was done in the presence of linoleic acid as the substrate. The LOX enzymes were then quantitated by densitometric analysis. Preliminary results show that there are more LOX enzymes in the leaves than in the stems. There are higher relative amounts of LOX enzymes with lower pI values in the leaves. Seed LOX-free strains still have several leaf and stem LOX enzymes. Not all strains show identical LOX enzyme patterns.

QUANTIFYING THE IMMUNOREATIVITY OF PPOLYCLONAL IGG AND IGY

Brittney Harthaus (Biology)
Marilyn Hart, Faculty Mentor (Biology)

Actin, a filament found in the cytoplasm in all eukaryotic cells, contributes to cell shape, cell mobility, and to the organization of certain tissues such as striated muscle. Actin is regulated by a variety of proteins, including actin capping protein (CP). CP is composed of two subunits, an alpha and a beta subunit. In previous studies the beta subunits have been shown to have distinct functions in murine myocardium. The goal is to determine if the alpha subunits, reminiscent of the beta subunits, have similar or distinct functions in cells and tissues. As a first step towards accomplishing this, we will determine the location of the alpha subunits in cells/tissues using antibodies specific for each alpha isoform. The objective of this research was to characterize recently generated chicken anti-alpha 2 IgG and IgY antibodies, quantifying their immonoreactivity. Murine hearts were removed, flash frozen, and the tissue solubilized. The proteins were separated by Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis (SDS-PAGE) and transferred to Nitrocellulose (NC) for subsequent Western Blot analysis. The immobilized proteins were allowed to react with dilutions of the antibodies and visualized with a secondary antibody labeled with alkaline phosphatase. The reactive titers of both the chicken anti-alpha 2 IgG and the chicken anti-alpha 2 IgY antibodies were 10^5, providing an initial characterization of the newly generated antibodies and suggesting an approximate working dilution for subsequent studies.

PREPARATION OF ECHINOSTOMES FOR COLLAR SPINE ANALYSIS WITH SCANNING ELECTRON MICROSCOPY

Angela Johnson & Derek Skillings (Biological Sciences)
Robert Sorensen, Faculty Mentor (Biological Sciences)
Michael Bentley, Faculty Mentor (Biological Sciences)

Echinostomes are parasitic trematodes in the family Echinostomatidae that infect homeothermic vertebrates as their definitive host. Echinostomes have complex life-cycles that use snails as their intermediate host. This group of parasites was named for their circumoral ring of collar spines, which aid in attachment in the vertebrate host. Morphometric features of these collar spines, and their smaller body spines have important diagnostic value. These spines can differ in number, placement, size, and relative arrangement. Spine patterns are taxonomically important in differentiating genus and species. Echinostomes vary in length from 1mm – 20 mm. Collar spines are a common diagnostic tool; yet little is known about body spine arrangement and morphology, as they are much smaller than the collar spines and nearly indistinguishable with light microscopy. This project's goal was to assess various techniques of preparing echinostomes for SEM, in order to utilize the micrographs for taxonomic evaluation. Frozen echinostomes collected from blue-wing teal intestines were placed in 70% ethanol for storage, and later rehydrated. These worms passed through a series of replacement additions: water to 2.5% gluteraldehyde in potassium buffer, to a 3M potassium buffer, to 2% osmium tetrachloride, back to buffer, to a final stage of acetone. The echinostomes were then critical-point dried with liquid CO_2, mounted and sputter-coated with palladium-gold. These echinostomes were then examined using the scanning electron microscope for spine arrangement and size. The results reveal significant information about echinostome morphology and these findings will be helpful in future taxonomic evaluations.

ROTATIONAL PERIODS OF ASTEROIDS

Andy Monson (Physics and Astronomy)
Steven Kipp, Faculty Mentor (Physics and Astronomy)

Asteroids are minor planets that orbit around the sun and are divided into different classes based on their orbit, size, composition and other physical characteristics. Knowing as many characteristics as possible about the roughly 100,000 known asteroids allow astronomers to speculate about how the solar system was formed and how it evolved. The rotational period of an asteroid is the amount of time it takes to rotate about its own axis and is useful for determining pole orientation, density and composition. By using the 0.5m telescope at Andreas Observatory six asteroids of unknown periods were observed and periods were obtained and submitted to the Collaborative Asteroid Lightcurve Link where astronomers from around the world compile their data for others to use. To determine the period, each asteroid was observed over the course of at least one night and the changing light reflected off the asteroid from the sun as it rotated was compared to distant stars that fundamentally stay constant in brightness. The determined periods in hours are: 1165 Imprinetta 7.9374±0.0016, 1299 Mertona 4.977±0.003, 1645 Waterfield 4.861±0.002, 1833 Shmakova 3.934±0.003, 2313 Aruna 8.900±0.003 and 13856 1999XZ105 4.4475±0.0055

Tuesday April 13 Presenters

8:45-10:30 A.M. **Session F** **CSU 255**

Speech Communications and English

Moderator: James Dimock

Joe Mohrfeld (J. Dimock) "A Burkian Pentadic Analysis of MSU Riot Narratives"

Laura Gieseke (R. Nord) "The Appearance of Online Links"

Cynthia Saba (L. White) "Autoethnography, Reflection of Personal Experience"

Jeannie Campe (S. Johnston) "William Blake: The Misunderstood Artist of the 19th Century"

Rebecca Rick (B. Klosa) '"Come on down": A critique of the communicative intent of game shows.'

Mohammed Omar (H. Phan) "Effects of September 11 Tragedy on Muslim Students at MSU, Mankato"

A BURKIAN PENTADIC ANALYSIS OF MSU RIOT NARRATIVES

Joey Mohrfeld (Speech Communications)
James Dimock, Faculty Mentor (Speech Communications)

In the fall of 2003 a riot occurred near the Minnesota State University, Mankato campus and in its aftermath many different narratives emerged describing the events. Using Kenneth Burke's pentad, this project examines those narratives in order to discover how different groups construct their accounts and which narrative elements different groups emphasize. By understanding how the narrative accounts given by these agents are influenced by their situation, the research allows us to see how riots emerge out of tensions within the conflicting productive contexts.

THE APPEARANCE OF INTERNET LINKS

Laura Gieseke (English)
Roland Nord, Faculty Mentor (English)

Research has shown that effective navigation contributes to website usability; however, researchers don't agree about what constitutes the best form for links. Students from two sections of Technical Communication (Eng 271) completed tasks requiring that they navigate Ucompass using either graphic links or underlined text links. Software developed for this study measured task success as well as time to complete a task. Participants completed a pre-test and a post-test questionnaire.

AUTOETHNOGRAPHY, REFLECTION OF PERSONAL EXPERIENCE

Cynthia Saba (Speech Communication)
Leah White, Faculty Mentor (Speech Communication)

Autoethnography is an innovative qualitative research method. It is the practice of reflecting on moments of your life, writing your story down, and examining the moments with a critical eye. Performing autoethnography allows the writer to capture the lessons learned and share these lessons with an audience. The audience in turn, benefits from the performance by receiving an empathetic view of a real life experience. Utilizing self-reflective prose about my mother's battle with cancer, I hope to better understand the experience as a whole and share my lessons with an audience. My paper outlines the basic principles of autoethnography and incorporates the text from my own autoethnography.

WILLIAM BLAKE: THE MISUNDERSTOOD ARTIST OF THE 19TH CENTURY

Jeannie Campe (English/French)
Mary Susan Johnston, Faculty Mentor (English)

The purpose of this project is to examine the artistic vision of William Blake as well as his impact on literature. William Blake was one of the most misunderstood artists of his time, which led to a life of isolation and poverty. Determined to follow his "Divine Image," Blake remained unappreciated until his twilight years, although he was still virtually unknown except for a small group of followers. William Blake is important today because of his innovative work stemming from his frustration with standard poetic tradition and techniques. This project explores Blake's collection of poems entitled *Songs of Innocence* and *Songs of Experience*. The two groups of lyrics depict, as Blake stated, "the Two Contrary States of the Human Soul." Although written a few years apart, Blake intended the two volumes to be read together. Each poem from *Songs of Innocence* stands as an independent poem, but also has a matched counterpart, or contrary in *Songs of Experience*. In addition, Blake expressed many of his conceptions visually and each poem is accompanied by a design and illustration that make up an integral part of the text.

"COME ON DOWN": A CRITIQUE OF THE COMMUNICATION INTENT OF GAME SHOWS

Cynthia Saba, Rebecca Rick, Ali Khokar, and Matthew Collie (Speech Communication)
Brian Klosa, Faculty Mentor (Speech Communication)

The game show has been one of the most stable and entertaining genres in television history. The game show has saturated itself into the mainstream popular culture. Beyond this saturation, many game shows have impacted social trends. The following oral reader's theatre group presentation examines this cultural saturation and social impact. Utilizing various montage segments from shows and critical research theory, this performance will argue that game shows have powerful communicative messages that affect a wide social audience.

EFFECTS OF THE SEPTEMBER 11TH TRAGEDY ON MUSLIM STUDENTS AT MINNESOTA STATE UNIVERSITY, MANKATO

Mohammed Omar (Biological Sciences)
Hanh Huy Phan, *Faculty Mentor (Ethnic Studies)*

The September 11th, 2001 attacks on the United States had a great impact on virtually every country and community around the globe. This wide-spread impact is a testament to the overwhelming influence the United States has on world affairs. However, in the United States, the Muslim community has stood out among others in receiving more attention from the American public and government – both in positive and negative ways. Because of the attackers' connections with Muslim countries, Muslims in this country were subjected to undue backlash of many forms. At the same time, Islam and Muslims received increased interest from many people trying to understand the religion from its followers. By taking into consideration the most vital and imminent issues facing the Muslim community at MSU, this research project, through a very comprehensive survey questionnaire, will examine and measure the impact these events had on the Muslim students at MSU. The survey questionnaire designed for this research deals with issues that include attitudes/interactions, discrimination, harassment, or hate crimes. Concurrently, the long-term effects of the September 11th events are also addressed. Also, in light of these events, a parallel is drawn from the backlash against Japanese people in World War II.

History, Anthropology, Sociology, and Modern Languages

Moderator: Larry Witherell ← can you point him out?

Jason Doerre (L. Witherell) "East Germany and the Reunification"

KIM

Nathan Bailey (R. Schirmer) "Effects of Mead Production on Cultures of Early Medieval Northern Europe"

Shirley Nieto Flores (K. Contag) "Pedagogical Model for Electronic Delivery of Spanish Literature - Don Quixote"

Nikolas Proehl (T. Schmid) "Investigating Changing Moral Boundaries Through Tattooing"

Blair Williams (L. Witherell) "The Two Revolutions: How the Nazis Accepted, Co-opted, and Rejected Einstein's Theories of Relativity"

Jonathon Zetzman (L. Witherell) "German Reunification in the West: A Process Built from the Political Elite to the Masses

EAST GERMANY AND THE REUNIFICATION

Jason Doerre (History).
Larry Witherell, Faculty Mentor (History)

This project defines what East Germans expected of an all German reunification prior to 1991, and how these expectations are related to the popular dissatisfaction of the reunification in East Germany after the actual reunification in 1991. The project begins by examining what East Germans expected of a hypothetical reunification in the years 1949-1991. Then the project turns to examine the dissatisfaction with the reunification in East Germany in the years following 1991. The expectations prior to 1991 are compared with the dissatisfaction in post 1991 East Germany, thus determining whether or not the current dissatisfaction in East Germany is the direct cause of the expectations of East Germans being met.

EFFECTS OF MEAD PRODUCTION ON CULTURES OF EARLY MEDIEVAL NOTHERN EUROPE

Nathan Bailey (Anthropology)
Ronald Schirmer, Faculty Mentor (Anthropology)

This project looks at the effects of the production of mead in Northern European cultures during the early medieval period. Mead, a wine made from honey, was widely produced and consumed because of a scarcity of grapes and cultivated grains for alcoholic beverages. This project examines what cultural and social systems were developed to support the production and use of mead, who made it, who consumed it, and what was its effect on societies?

PEDAGOGICAL MODEL FOR ELECTRONIC DELIVERY OF SPANISH LITERATURE – *Don Quixote*

Shirley Nieto Flores (Computer Science and Spanish)
Kimberly Contag, Faculty Mentor (Modern Languages)

The purpose of this research project is to develop an electronic document based on ***Don Quixote*** to conduct research how useful multimedia is as an active learning tool for reading and studying literature. After researching the variety of available ***Don Quixote*** learning resources and researching electronic media tools available for teachers, my professor and I will collaborate with to produce a sample model for delivery of interactive materials in a CD format containing an interactive resource and study guide. While the project cannot be tested until after it is developed, I hope to test the project next year when ***Don Quixote*** is taught in the spring semester of 2005. For this project I will have the cooperation of two faculty members in the Modern Languages Department: Dr. Kimberly Contag and Dr. James Grawoska who have already developed a number of materials that can be incorporated once my research on effectiveness and delivery are completed.

INVESTIGATING CHANGING MORAL BOUNDARIES THROUGH TATTOOING

Nikolas L. Proehl (Sociology)
Tom Schmid, Faculty Mentor (Sociology & Corrections)

This study examines undergoing tattooing as a basis for understanding moral passage. Moral passage occurs when a social act undergoes a transformation from an undesirable or deviant act, to one that is generally tolerated or accepted by the greater society. Interviews were conducted with individuals who have undergone tattooing, and their experiences and encounters with others in social settings were documented and analyzed. Results indicate that while individuals often undergo tattooing because of their attraction to its deviant connotations, many of these same individuals do not identify themselves as deviant. At the same time, persons with tattoos typically find toleration and even encouragement from others, but many remain hesitant to reveal the presence of their tattoos in certain social situations. These and other findings indicate that the moral boundaries of tattooing vary along familial, subcultural, situational, and other dimensions; and those individuals with tattoos therefore find themselves in interactions on both the conventional and the deviant sides of these moral boundaries; and that these interactions can themselves work to alter the moral boundaries.

THE TWO REVOLUTIONS: HOW THE NAZIS ACCEPTED, CO-OPTED, AND REJECTED EINSTEIN'S THEORIES OF RELATIVITY

Blair Williams (History)
Larry L. Witherell, Faculty Mentor (History)

To the Nazis, Albert Einstein was the definition of a nemesis—a Jew, a pacifist, an internationalist, and an intellectual. While his work went against the dogma of the regime, it became apparent that the "abstract" theoretical science associated with Jewish scientific thinkers such as Einstein was necessary for the Nazi's military. The regime chose to allow teaching of "Jewish physics" in 1938 at the same time *Kristallnacht* mobilized the Germans against the Jews. This is the story of the development of anti-Semitism in German science, its politicization, and the efforts undertaken to save theoretical physics in the Third Reich. Utilizing memoirs of both scientists and Nazi figures, biographies and other secondary scholarship, this project reveals the confrontation between the Nazi regime's political and military needs and its own horrible racialism.

GERMAN REUNIFICATION IN THE WEST: A PROCESS BUILT FROM THE POLITICAL ELITE TO THE MASSES

Jon Zetzman (History)
Larry Witherell, Faculty Mentor (History)

This project examines the development of German reunification in 1990 from the perspective of the Federal Republic of Germany (West Germany), and explains how the policy of reunification was developed and advanced by the West German political leadership and was not the product of mass support. The development of the reunification policies, beginning with the first West German Chancellor, Konrad Adenauer (1949-1963), and continuing to the reunification under the chancellorship of Helmut Kohl in 1990 are examined in an effort to reveal how the policies were promoted to the masses and gain their support for reunification.

Biology, Chemistry, and Math & Statistics

Moderator: Marie Pomije

Anthony Dylla (M. Pomije) "Synthesis and Characterization of Pt (CN-*p*-$(C_2H_5)C_6H_4)_2(CN)_2$"

Heather Kaiser (L. White) "The New Expansion of the Growth Hormone, Humatrope - Are you Short Enough?"

Anderew Tackmann (M. Rahman) "Effects of Birdkeeping on Lung Cancer"

Ryan Peck (M. Hart) "Identification of Proteins Interacting with Actin Capping Protein Alpha Isoforms in Heart Muscle of Mice"

Stacy Mortensen (T. Vorlicek) "Mineral-Promoted Degradation of Pharmaceuticals: Aspirin as a Model Compound"

Aaron Schindler (D. Wrigley) "The Innate Immune Response in Eisenia Fetida (earthworms) to Microbial Challenges"

SYNTHESIS AND CHARACTERIZATION OF $Pt(CN\text{-}p\text{-}(C_2H_5)C_6H_4)_2(CN)_2$

Tony Dylla (Chemistry)
Marie Pomije, Faculty Mentor (Chemistry)

The development of reversible chemical sensor materials with high stability have received increasing attention. Materials that show dramatic and reversible color changes in the visible or near-infrared (near-IR) spectral regions upon exposure to volatile organic compounds (VOCs) are of particular interest due to potential applications in monitoring waste sites and chemical generating facilities. This research studies platinum-based compounds which exhibit vapochromic behavior.

A new synthesis of *trans*-dicyano bis(isocyanoparaethylbenzene) platinum(II), $Pt(CN\text{-}p\text{-}(C_2H_5)C_6H_4)_2(CN)_2$ is presented. The previously reported route using thermal rearrangement predominately generated the *cis* isomer.[1] This new route can be utilized to predominately generate the *trans* isomer. Additional studies elucidating the thermal rearrangement of the *trans* isomer to the *cis* isomer will be presented. *Trans*-$Pt(CN\text{-}p\text{-}(C_2H_5)C_6H_4)_2(CN)_2$ was characterized by single crystal X-ray crystallography, ^1H NMR spectroscopy, infrared spectroscopy and mass spectroscopy.

1. Buss, C.E.; Mann, K.R. "Synthesis and Characterization of $Pt(CN\text{-}p\text{-}(C_2H_5)C_6H_4)_2(CN)_2$, a Crystalline Vapoluminescent Compound That Detects Vapor-Phase Aromatic Hydrocarbons." *J. Am. Chem. Soc.* **2002**, *124*, 1031-1039

THE NEW EXPANSION OF THE HUMAN GROWTH HORMONE, HUMATROPE: ARE YOU SHORT ENOUGH?

Heather Kaiser (Speech Communication)
Leah White, Faculty Mentor (Speech Communication)

For the past two decades, Humatrope, a growth hormone used on both adults and children, was strongly restricted for the use on children. Children had to be suffering from a diagnosed growth disease in order to receive treatment or insurance coverage. However, *Newsweek* of September 22, 2003 reported the drug manufacture; Eli Lilly & Company received the FDA's approval this summer to expand the application of Humatrope, to now include children with "idiopathic short stature," meaning shortness without a medical explanation. Children with unexplained, undiagnosable shortness are now eligible for Humatrope treatment. Humatrope merits our examination, not because the drug itself is revolutionary, but Lilly's new application is: on seemingly healthy children who have failed to grow, but the cause is unknown. This expansion is relevant to the public because it is about access to medication and a patient's right to decide what is best for their own health.

EFFECTS OF BIRDKEEPING ON LUNG CANCER

Andrew Tackmann (Mathematics and Statistics)
Jonathan Hellman (Mathematics and Statistics)
Jamie Johnson (Mathematics and Statistics)
Dr. Mezbahur Rahman, Faculty Mentor (Mathematics and Statistics)

Logistic regression is reviewed in estimating the underlying model parameters and in making inferences about the parameters. A contingency table approach in computing goodness of fit in logistic regression is elaborated. An existing data on a sample of lung cancer patients and a control group is used to apply the procedures discussed. The data reveals that between the groups considered, the factors 'bird keeping' and 'the number of years of smoking' are significant as the causes for lung cancer. This is a Post Hoc data analysis study.

IDENTIFICATION OF PROTEINS INTERACTING WITH ACTIN CAPPING PROTEIN ALPHA SUBUNIT ISOFORMS IN MURINE MYOCARDIUM

Ryan Peck (Biological Sciences)
Marilyn Hart, Faculty Mentor (Biological Sciences)

Actin, an essential component of all living cells, contributes to cell shape, cell motility and the integrity of specific structures such as the sarcomere of striated muscle. Actin molecules are rod-like in structure, and are composed of many identical pieces that attach and disassociate in a dynamic process. Capping protein (CP) anchors actin filaments, regulates the length of actin molecules, and maintains a cell's ability to contract and relax. CP is a heterodimer composed of an alpha and beta subunit. There are three forms of the alpha subunit ($\alpha1$, $\alpha2$, and $\alpha3$) and three forms of the beta subunit ($\beta1$, $\beta2$, and $\beta3$). Previous studies indicate that $\beta1$ and $\beta2$ have unique localizations and functions within murine myocardium. Recent studies have shown that $\alpha1$ and $\alpha2$ co-localize in myocardium but have distinct localizations in skeletal muscle cells. This early evidence suggests that $\alpha1$ and $\alpha2$ may also have novel functions within muscle cells and may interact with novel proteins. The goal of this research is to identify cellular proteins that interact with $\alpha1$ and $\alpha2$ utilizing coimmunoprecipitation. This was accomplished using previously generated polyclonal rabbit anti-$\alpha1$ and chicken anti-$\alpha2$ antibodies. The antibodies were purified and chemically attached to an immobilized matrix. The matrix is currently being used to identify novel proteins that interact with $\alpha1$ and $\alpha2$. The results will be analyzed by Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis, native gel electrophoresis and Western blot analysis.

MINERAL CATALYZED DEGRADATION OF PHARMACEUTICALS: ASPIRIN AS A MODEL COMPOUND

Stacy L. Mortensen (*Chemistry and Geology*)
Trenton Vorlicek, Faculty Mentor (Chemistry and Geology)

The persistence of pharmaceuticals in the environment and their effects on the environment and biological life is an emerging issue currently being debated in the scientific community. Although an effort has been made to quantify the presence of pharmaceuticals in the environment, the area concerning the degradation pathways of pharmaceuticals has not been thoroughly investigated. One aspect that has not been researched is the effect minerals may have in the degradation of pharmaceuticals. Soils and sediments contain minerals which come in contact with aqueous systems that contain pharmaceutical residues. By ignoring the interactions of minerals and their role in the degradation of pharmaceuticals, the estimated persistence of pharmaceuticals in the environment may be over predicted. The interaction between the mineral compound, alumina (Al_2O_3), and the pharmaceutical, aspirin, will be studied as a model to predict catalysis of similar pharmaceuticals by minerals abundant in soils and sediments. This project focuses on exploring the kinetic relationship between the hydrolysis of aspirin and the concentration of alumina. A positive correlation between the concentration of alumina and an increase in the rate of aspirin hydrolysis supports the hypothesis that minerals catalyze the degradation of pharmaceuticals in the environment; therefore, mineral catalyzed degradation warrants further studies.

THE INNATE IMMUNE RESPONSE IN EISENIA FETIDA TO MICROBIAL CHALLENGES

Aaron Schindler (Biological Science)
Dorothy Wrigley, Faculty Mentor (Biological Sciences)

The common earthworm, *Eisenia fetida,* exhibits a rudimentary immune system. The earthworm needs cellular and chemical responses against a constant microbial exposure from its natural environment. Some cellular and chemical responses are found in the coelomic fluid and have been shown to demonstrate anti-microbial characteristics. This project uses microscopy and modified staining techniques to differentiate and categorize the cellular components found in the coelomic fluid. Following a microbial challenge by *Klebsiella pneumoniae*, an inflammatory response was initiated. Six groups of earthworms were injected with 0.05 ml of 1.0×10^6 cfu /ml *K. pneumoniae* on day one and tested over a period of five days. A group of three worms was shocked each day for the next five days to cause the coelomic fluid and cells to pass through the body wall. The coelomic fluid was placed directly on glass slides, dried and stained with a modified Wright's stain using a wash buffer solution with a pH of 6.3. The stained cells were differentiated into four categories. Furthermore, total cell counts were determined. The data indicated a marked proliferation in total cell counts in comparison to the control worms. This trend of increasing total cell counts continued over the five days. The percentages of the four types of coelomic cells from the differential remained constant. Cells were photographed and documented for comparisons. Additional studies are ongoing to determine how long the *Eisenia fetida* take to remove *Klebsiella pneumoniae* from the coelomic cavity.

Computer and Information Science

Moderator: Sarah Klammer

Travis Calvert (S. Case) "Wireless Location Determination: Using Existing 802.11 Wireless Networks to Determine a Users Location"

Christian Dinger (W. Sandmann) "A Comparison of Traditional and Course Evaluation Methods"

Tejas Gandhi (C. Veltsos, T. Secott) "Comparison of Different Methods for Performing Sequence Alignment"

Jeff Henline (W. Sandmann) "Assessing Online Course Interaction Among Learners"

Tapojit Kumar (S. Schilling) "Comparison of Optimization Techniques in Large-scale Transpontation Problems"

Francisco Pinto (S. Klammer) "Case Study: Replacing the Open Door Health Center Paper Based System with an Integrated Electronic System"

Abhijit Shakya (S. Klammer) "Changing Perceptions of Programming Among Computer Science Students"

WIRELESS LOCATION DETERMINATION: USING EXISTING 802.11 WIRELESS NETWORKS TO DETERMINE A USER'S LOCATION

Travis Calvert (Computer Science)
Dr. Steven Case, Faculty Mentor (Computer Science)

The ability to determine a user's location through an existing 802.11 wireless network has vast implications in the area of context-aware and pervasive computing. Such abilities have been developed mainly in the Linux environment to date. To maximize its usefulness, a location determination system was developed for the more dominant Windows operation system. While being able to operate outdoors as well as indoors, this system succeeds where traditional GPS (Global Positioning Systems) fail, namely indoor environments. This system could benefit the large number of existing wireless networks and requires no additional hardware, only a few simple software downloads. The ability of a user to determine his/her location with the click of a button and begin using the services in the immediate vicinity or be shown a map leading to the desired area/item (a book in a library for example), are but two illustrations of the benefits that a wireless location determination system serve.

A COMPARISON OF TRADITIONAL AND ONLINE COURSE EVALUATION METHODS

Christian Dinger (Computer & Information Sciences)
Warren Sandmann, Faculty Mentor (Academic Affairs)

Student evaluation of teacher performance is the most commonly used method of measuring course quality in higher education. Because most courses are measured by the learners themselves, it is imperative that their feedback be as useful as possible. This research investigates the effect of mode on such evaluations. Does mode affect the depth, or quality, of the open-ended student responses? Students from several sections of an intro-level course were asked to participate. Each section was divided into two groups; a pencil-and-paper control group, and an online test group. The control group was administered a paper evaluation while the test group was asked to complete the same evaluation in an online environment using Assess v1.0, an anonymous survey system. Open-ended responses from both groups will be reduced to quantifiable idea units and then compared to one another. The online evaluation is expected to produce a higher number of idea units per response.

COMPARISON OF DIFFERENT METHODS FOR PERFORMING SEQUENCE ALIGNMENT

Tejas Gandhi (Computer Science)
Christophe Veltsos, Faculty Mentor (Computer Science)
Timothy Secott, Faculty Mentor (Biological Sciences)

The fact that biological sequences can be represented as strings belonging to a finite alphabet (A, C, G, and T for DNA) plays an important role in connecting biology to computer science. It allows us to apply various string comparison techniques available in computer science. As a result, various applications have been developed that facilitate the task of sequence alignment. The problem of finding sequence alignments consists of finding the best match between two biological sequences. A best match, one which displays high sequence similarity, potentially hints at an evolutionary relationship and functional similarity. However, there is a lack of research on how reliable and efficient these applications are especially when it comes to comparing two sequences that might not be highly similar (but could have common patterns that are small yet biologically significant). This study compares three biological sequence comparison packages namely WuBlast2, Fasta3, and MPsrch which implement Blast, FastA, and Smith-Waterman algorithms, respectively. In order to do so, a framework was developed to facilitate the task of data collection and create meaningful reports. Amino acid sequences corresponding to related proteins, as well as the DNA sequences encoding these proteins, were analyzed with matching parameters on each application. Initial observations show a trend of increasing variations between the matches produced by the three applications with decreasing sequence similarity. In addition, the time required for performing the search showed a pattern of exponential growth as the complexity of the sequence is increased.

ASSESSING ONLINE COURSE FOR INTERACTION AMONG LEARNERS

Jeff Henline (Computer Information Science)
Warren Sandmann, Faculty Mentor (Academic Affairs)

The number of online and distance courses at the college level is on the rise. With more courses being developed and delivered via the web, there is an ever growing need for facilitators of these courses to assess the interaction and communication that occurs in this online environment. The basis of this research was to examine the interaction that occurs in an online course with the attempt to answer questions about the validity of online learning as a whole. It is obvious that a student taking an online course will have a totally different experience than a student participating in a traditional classroom, but, can that student still interact successfully and at a high level with other students and the instructor? This research investigated online student interaction, and, on a trial basis, implemented a rubric created for online assessment purposes.

COMPARISON OF OPTIMIZATION TECHNIQUES IN LARGE SCALE TRANSPORTATION PROBLEMS

Tapojit Kumar (Computer and Information Science)
Susan Schilling, Faculty Mentor (Computer and Information Science)

The transportation problem is a classic Operations Research problem where the objective is to determine the schedule for transporting goods from source to destination in a way that minimizes the shipping cost while satisfying supply and demand constraints. Although it can be solved as a regular Linear Programming problem, other methods exist. Linear Programming makes use of the "Simplex Method," an algorithm invented to solve a linear program by progressing from one extreme point of the feasible polyhedron to an adjacent one. The algorithm contains tactics like pricing and pivoting. For a transportation problem, a simplified version of the regular Simplex Method can be used, known as the "Transportation Simplex Method." This paper will discuss the functionality of both of these algorithms, and compare their run-time and optimized values with a heuristic method called the "Genetic Algorithm." Genetic Algorithms, pioneered by John Holland, are algorithms that use mechanisms similar to those of natural evolution to encourage the survival of the best intermediate solutions. The objective of the study was to find out how these algorithms behave in terms of accuracy and speed when solving a large-scale problem.

CASE STUDY: REPLACING THE OPEN DOOR HEALTH CENTER PAPER BASED SYSTEM WITH AN INTEGRATED ELECTRONIC SYSTEM

Francisco Pinto (Computer and Information Sciences)
Sarah Klammer, Faculty Mentor (Computer and Information Sciences)

Record keeping for patient appointments and patient medical records has always been a challenge. It becomes increasingly complex as an organization grows because there is more information to be managed and more people are involved in the data manipulation process. As we live in an era where information is essential, a proper system needs to be implemented to efficiently use the information available to the organization. This case study examined the replacement process of the Open Door Health Center's paper based system by an integrated computer solution to achieve a more efficient and resourceful use of information. Three parts of this process are examined: 1) the growth of the organization that created a need for an electronic system; 2) the identification of system requirements, including the challenges faced during software selection; 3) the implementation status and benefits the new system will provide.

CHANGING PERCEPTIONS OF PROGRAMMING AMONG COMPUTER SCIENCE STUDENTS

Abhijit Shakya (Computer and Information Sciences)
Sarah Klammer, Faculty Mentor (Computer Information Science)

Many students, who are taking classes offered by the Computer and Information Sciences (CIS) Department, have stated that they dislike programming. Programming is required in many of the entry-level positions in the field of Computer Science. Do student perceptions and opinions change as they gain more experience in the major? What factors influence these perceptions? In the first year of this study, data was collected regarding perceptions among students who were enrolled in courses offered by the CIS Department. When students were asked if they liked to program, about 65% of freshmen and sophomores, and 60% of juniors and seniors responded that they did. When asked if they disliked programming and tried to avoid it, about 20% of freshmen and sophomores, and 30% of juniors and seniors responded yes. This study had been continued so the research team could investigate if the perceptions of these students have changed from one year to the next. If changes have occurred, this study will also identify possible factors that influenced the students during that transition. Surveys were distributed to students enrolled in selected courses offered by the CIS Department at Minnesota State University, Mankato during the spring 2004 semester.

Women's Studies, Art, Theatre, and Mass Communication

Moderator: Barbara Bergman

Sophia Bera (K. Surkan) "Homicidal Women And The Men They Kill: A Feminist Critique of How Female Killers are Inaccurately Represented by the Media"

Krista Chapman (S. Freeman) "Predator and Prey?: A Feminist Critique how Male and Female Sexuality is Represented in High School Sex Ed"

Cesia Kearns (J. Johnson) (T. Bliese) "Performance Sculpture - A Creative Exploratory Collaboration Between Sculpture and Dance"

Amy Norsten (K. Surkan) "Influence of Heterosexism and Homophobia upon the Development of Drug Addiction Amongst Lesbians and Gays"

Jane Vevea (K. Surkan) "50 Dollars for the Powder Room: Adapting Sexual Content in Breakfast At Tiffany's for the Silver Screen"

Kendra Netzke (K. Surkan) "Bright, White World: Race and Beauty Ideals in American Pring Media"

Roberta Warneke (K. Surkan) "The Women's Health Movement and the History of Childbirth"

HOMICIDAL WOMEN AND THE MEN THEY KILL:
A FEMINIST CRITIQUE OF HOW FEMALE KILLERS ARE INACCUARATELY REPRESENTED BY THE MEDIA

Sophia Bera (Women's Studies)
Kim Surkan, Faculty Mentor (Women's Studies)

This research examines real women who have killed and the reasons why, and then compares them to the ways in which homicidal women are portrayed by the media. In recent years there has been a rise in media interest in homicidal women. Movies such as "The Burning Bed" and "Sleeping With the Enemy" have been released with the theme of women who kill their husbands after enduring years of physical and emotional abuse. Many real-life women went through the necessary steps to place restraining orders to help protect themselves and their children but after years of trying some took matters into their own hands and killed their abusive spouses. Many of the women felt no remorse and there was often a sense of relief when they realized the abuse had come to an end. Even though these women killed in self-defense, the jury rarely saw it that way. Currently, homicidal women are serving life sentences in jail for the killing of their abusive spouses.

PREDATOR AND PREY?: A FEMINIST CRITIQUE HOW MALE AND FEMALE SEXUALITY IS REPRESENTED IN HIGH SCHOOL SEX ED

Krista Chapman (Women's Studies)
Susan Freeman, Faculty Mentor (Women's Studies)

Sexual education in the United States has always been an issue of controversy as teachers, parents, administrators, and politicians work together and against each other to decide what students should and should not learn about sex. This project examined the degree to which comprehensive and abstinence-only adolescent sexual education guidelines employ gender stereotypes as well as traditional ideas about gender. Through feminist evaluation and comparison of the widely recognized comprehensive sexual education guidelines provided by the Sexuality Information and Education Council of the United States and the popular abstinence-only Texas based program, Aim for Success, this project revealed assumptions about gender differences in adolescent sexual education today and how these assumptions teach teenagers the appropriate behavior for their gender and sex. This research began a larger project of evaluating sexual education in the United States and what teens are really being taught in today's political climate of abstinence and conservative sexual health.

PERFORMANCE SCULPTURE - AN EXPLORATORY COLLABORATION BETWEEN SCULPTURE AND DANCE

Cesia G. Kearns (Art)
James Johnson, Faculty Mentor (Art)
Thomas Bliese, Faculty Mentor (Theater and Dance)

Kinetic sculpture suggests new visual possibilities when combined with dance. Wishing to explore such avenues of interaction for sculpture, this artist sought to develop pieces that could be incorporated into choreography. An artist and a choreographer wove their concepts and styles together to create a performance art piece that rose from the reciprocal influences of interactive sculpture and dance. The creative process included development of concepts, visual imagery, and movement as the artist and choreographer shared ideas. The choreography of the original dance influenced the form, structure, and conceptual elements of the sculpture, which was developed in reaction to the movements. The choreography was then readapted in reaction to the sculpture. The choreography inspired the sculpture's form; the dance evolved in response to the sculpture. The sculpture created more than just an environment for the dancers; it created a new visual relationship in which the movement and form of both sculptures and dancers echoed each other. The result is a collaboration in which both dance and sculpture transcend their individual art forms to become a symbiotic performance piece. This presentation shares the stages of evolution in the creative process and reveals the final outcome of the piece.

INFLUENCE OF HETERSEXISM AND HOMOPHOBIA UPON THE DEVELOPMENT OF DRUG ADDICTION AMONGST LESBIANS AND GAYS.

Amy Norsten (Women's Studies)
Kim Surkan, Faculty Mentor (Women's Studies)

This study examines homophobia and heterosexism, which denies, denigrates, and stigmatizes any nonheterosexual form of behavior, identity, relationship, or community (Herek, 1990) and how it influences the incidence of drug addiction among lesbians and gays. This study utilizes interviews and surveys with chemically dependent lesbians and gays in recovery to examine and expand upon research that suggests drug addiction amongst lesbians and gays is significantly related to heterosexism and homophobia, which fosters the internalization of homophobia. This research discusses subjects' prior experiences with family, community, and institutional incidences of homophobic and heterosexist attitudes and the onset of drug abuse in relation to "coming out."

50 DOLLARS FOR THE POWDER ROOM: ADAPTING SEXUAL CONTENT IN *BREAKFAST AT TIFFANY'S* FOR THE SILVER SCREEN

Jane M. Vevea (Theatre)
Kim Surkan, Faculty Mentor (Women's Studies)

This paper was an examination of the societal impact on the content of sexuality depicted in the movie *Breakfast at Tiffany's*, in comparison with the Truman Capote novella of the same title. This study's evaluation of the Hollywood Production Code in 1961 helps to better explain the societal repression of sexual content, prevalent in the book, and in the film adaptation. Further, this examined the character Holly and the societal views that forced a change in the elements that defined her character throughout the novella. Comparing the sexuality of the character Paul with that of Holly exposed reactions to the sexuality of women and gay men—thus giving a perspective of what was acceptable for women and their sexuality in both film and literature in American society during 1961.

BRIGHT, WHITE WORLD: RACE AND BEAUTY IDEALS IN AMERICAN PRING MEDIA

Kendra Netzke (Mass Communications)
Kim Surkan, Faculty Mentor (Women's Studies)

This research project explores cosmetic advertising in two popular women's magazines, *Ebony and Cosmopolitan.*The main focus of the research is how race is related to beauty ideals. The presentation will focus on how white race standards for beauty are imposed on all races Gender roles in relation to race will also be included in the research.A second focus of the research is how the advertising in these magazines helps to reinforce these ideals and roles. The presentation also examines how the ads have changed in recent decades.This is done by using a comparative analysis of several issues of the two magazines over different decades.

THE WOMENS HEALTH MOVEMENT AND THE HISTORY OF CHILDBIRTH

Roberta Warneke (Women Studies)
Kimberly Surkan, Faculty Mentor (Women Studies)

Women's childbirth decisions are often affected by their socioeconomic status and the options available to them. The history of childbirth practices has effected women's choices of today. This research looks at both the historical and contemporary childbirth options available to pregnant women. Methodologically the project considers the medicalization of childbirth in a comparative analysis of the last 100 years in the United States with a focus on the effects women pioneers had on the Women's Health Movement.

Using selected texts; I chronicle the history of childbirth and the many factors that influenced it, such as the professionalization of medicine, Women's Health Movement, economics, and politics. Looking at political players, economic factors, and the powerful women leaders of the past in a contrast and comparative analysis will show how feminism has affected childbirth. Results show childbirth has gone from a woman centered and socially supportive celebration to a scary medicalized event, which is presently coming back to a woman-centered event. Results also show some important differences and similarities between the past and present in relation to the morbidity and mortality rates, and the medical procedures used. I also show how medical interventions used in childbirth played a pivotal role in reversing the medicalization of this process. This analysis of the past and present will show that women are reclaiming childbirth from the medical institutions.

Performance Arts

Moderator: James Grabowska

Jinnie Hinderscheit (J. Grabowska) 'The Making of the Movie "Don Quixote of Mankato: Tale of an American Cowboy"'

Emi Onodera (V. Norasakkunkit) "Cultural-Priming; A Method which Deliberately Activate an Eastern or Western Mode of Thought"

Partha Pratim (C. Guerra-Salcedo) "Operating Systems Student Simulation Project"

Rebecca Rick (L. White) "The Seven Deadly Sins: Examining the Human Element"

THE MAKING OF THE MOVIE "DON QUIXOTE OF MANKATO: TALE OF AN AMERICAN COWBOY."

Jinnie Hinderscheit (Spanish)
Jim Grabowska, Faculty Member (Spanish)

In this presentation, the researcher discusses the experiences and the process of making the simple low-budget film, Don Quixote of Mankato: Tale of an American Cowboy. This film is a comedy and pseudo western that parallels the original story by Cervantes', *Don Quixote of la Mancha.* The film is about a man who goes crazy from watching and reading so many westerns, that he believes himself a cowboy and sets off with his side kick, Sancha, to get into misadventures throughout Mankato. As Cervantes had achieved through his novel, the movie attempts to revive the romance of the American cowboy while entertaining the viewer. The goal for this film is to provide an innovative artistic interpretation of the 400 year-old novel that has been translated into as many languages as the bible. Those who have read and fallen in love with Don Quixote appreciate its timeless characters and cross-cultural humor as the very same misadventures from the book are experienced by Don Quixote, Cowboy of Mankato. Despite the parallel between the movie and the book, the movie stands on its own and will get a laugh out of any viewer.

CULTURAL-PRIMING: A METHOD WHICH DELIBERATELY ACTIVATES AN EASTERN OR WESTERN MODE OF THOUGHT

Emi Onodera (Speech Communication)
Vinai Norasakkunkit, Faculty Mentor (Psychology)

This cross-cultural psychological research explores how culturally patterned dominant modes of thought can be suppressed to activate an alternative mode of thought through a procedure called cultural priming. Specifically, we attempt to deliberately activate an Eastern or Western mode of thought among American and Japanese participants. Previous priming procedures activating these cultural modes of thought have shown to be effective among English speaking American populations but not effective among non-English speaking Japanese population. This lack of procedure effectiveness when applied cross-culturally may be due to the nature of the priming stimuli, which seems to rely heavily on verbal processing.

The purpose of this study is to cross-culturally standardize priming stimuli between the United States and Japan by having the procedure capitalize more on visual processing (i.e. the use of visual stimuli to activate relevant constructs). Cross-culturally standardized visual primes will be created based on actual social situations constructed by Japanese and American participants. The theory and method behind this procedure and the work in progress will be presented.

OPERATING SYSTEMS STUDENT SIMULATION PROJECT

Partha Pratim (Computer and Information Sciences)
Jeremy Steffens (Computer and Information Sciences)
Kris Zarns (Computer and Information Sciences)
Cesar M Guerra-Salcedo, Faculty Mentor (Computer and Information Sciences)

Operating system theory and concepts are typically presented in a way that is hard to relate to practical applications. Textbooks and papers offer explanations about algorithms and methods but rarely describe issues regarding implementations. The purpose of this research is to describe and implement a simulator of an operating system. Algorithms for process management, processor management, memory management, and I/O management have been implemented using Java and a graphical user interface have been created using swing. The project consisted of three major phases: process definition and loading, memory and deadlock management, and implementation of scheduling and paging algorithms. The simulator allows comparisons between different methods for related tasks such as paging and scheduling. The importance of this tool is for the student to understand implementation issues and to visually execute and compare different classical algorithms for common operating system tasks.

THE SEVEN DEADLY SINS: EXAMINING THE HUMAN ELEMENT

Rebecca J. Rick (Speech Communication)
Leah White, Faculty Mentor (Speech Communication)

This performance art piece is a ten minute performance to demonstrate what the seven deadly sins are and how they affect us on a human level. This piece examines each sin using selections of poetry to demonstrate the facets of the seven deadly sins. This allows the audience not only to identify with the sin, but also acknowledges they are a part of human nature.

Angela Huwe (M. Hart) "Characterization of Structural Abnormalities in the Cardiac Myocytes of Transgenic Mice"

Matthew Iffert (R. Schirmer) "Silvernale Mississippian/Woodland Culture Site: Comparison of Midden Pits Between Block One and Block Four"

Benjamin Jilek (M. Hart) "Immunolocalization of Actin Capping Protein Alpha 1 and Alpha 2 Proteins in Marine Tissues"

Aaron Karst (E. Perdomo) "Effects of Race and Ethnicity on

Elizabeth Muellenbach (P. Knoblich) "A Surgically Induced Low Aldosterone Model"

Obede Matayo (S. Klammer) "A Comparative Analysis of Data Mining Techniques Using Health Care Data"

Andy Monson (P. Eskridge) "Determining Star Formation History in Galaxies Using PCDM's and Pixel Maps"Model"

Peter Polski (M. Hart) "Morphological Characterization of Transgenic Murine Myocardium"

Steve Sullivan (M. Hart) "GST Pulldown Analysis: Identification of Interactions Between CPB1/CPB2 and Novel Proteins"

Andy Tan (P. Sullivan) "Ethanol Hybrid"

Anthony Wacholtz (D. Engen) "Spatial Intelligence and the Ability to Comprehend Textual/ Graphical Instructions"

Peter Weber (D. Wrigley) "Nisin Resistance of Baciluus Cerus: Preparation of Nisin"

CHARACTERIZATION OF STRUCTURAL ABNORMALITIES IN THE CARDIAC MYOCYTES OF TRANSGENIC MICE.

Angela K. Huwe (Biological Sciences)
Marilyn C. Hart, Faculty Mentor (Biological Sciences)

Actin is an essential component of eukaryotic cells that contributes to both the shape and movement of the cell. Actin is regulated by a variety of accessory proteins including actin capping protein (CP). CP is a heterodimer composed of an α and β subunit. Lower organisms have one form of each of the subunits. In higher organisms, there are three forms of the α subunits (α1, α2, α3) and three forms of the β subunit (β1, β2, β3). Previous transgenic studies indicate that CP attaches actin filaments to the Z line of striated muscle and that the beta isoforms have distinct functions in murine myocardium. The purpose of this research is to characterize the structural abnormalities in hearts of transgenic mice expressing forms of CP defective in attaching thin filaments to Z lines. Hearts were removed from mice ranging in age from 6-9 months, their gross morphology assessed. The hearts were then flash-frozen and sectioned using a cryotome to a thickness of approximately 5-8 microns thick. Sections were transferred to gelatin coated slides and their morphology scrutinized by phase contrast microscopy. The sections were reacted with mouse anti-actin antibody and the immunocomplex visualized by fluorescence microscopy. Results reveal a reorganization of actin filaments in transgenic myocardium.

SILVERNALE MISSISSIPPIAN/WOODLAND CULTURE SITE: COMPARISON OF MIDDEN PUTS BETWEEN BLOCK ONE AND BLOCK FOUR

Matt Iffert (Anthropology)
Shawn Laven (Anthropology)
Ron Schirmer, Faculty Mentor (Anthropology)

The Silvernale Dig (21GD03) on the Canon Valley Trail near Red Wing offers an extensive look at what may be a seasonal habitation area for several different groups of Late Woodland or Early Mississippian cultures. Excavation in Blocks One and Four showed mottled soil at around 40cm that appeared to have cultural attributes. Choosing to dig further, in the 40-50cm level we discovered a variety of artifacts in both blocks at the same level that may be indicative of a midden deposit. The purpose of my research is to determine if these areas were indeed midden deposits, and if so, to analyze and compare the two. I will be using field reports from earlier excavations at this site and ones similar to it. I will also be using the expanding computerized artifact cataloging system to aid my research. Efforts towards completing the catalog are still underway as we have not yet entered all the artifacts from the site yet.

IMMUNOLOCALIZATION OF ACTIN CAPPING PROTEIN IN MURINE TISSUES

Benjamin Jilek (Biological Sciences)
Marilyn Hart, Faculty Mentor (Biological Sciences)

Actin is an essential component of all cells. Actin contributes to cell shape, cell structure and cell motility. Actin's growth and regulation depends upon a variety of proteins including actin capping protein (CP). CP is composed of two different proteins, an alpha and beta subunit. The alpha subunit has three different forms: alpha1, alpha2 and alpha3. In previous studies, we have determined that the different alpha forms are expressed at different levels in a variety of tissues and some tissues contain only alpha1 or only alpha2. This data suggests that the different alpha subunits may have different functions. The goal of my undergraduate research is to elucidate the cellular functions of the alpha subunits of CP by determining where the alpha proteins are in a cell or tissue using immunolocalization studies. Previously alpha1 and alpha2 specific antibodies were purified from rabbit polyclonal antisera. The antibodies were used in conjunction with a recently generated chicken anti-alpha2 antibody and a mouse anti-actin antibody to assess the distribution of the alpha proteins relative to actin in a variety of murine tissues. CP alpha1 and alpha2 proteins have similar distributions in murine myocardium, co-localizing with actin at the Z-lines of sarcomeres. In skeletal muscle, both isoforms localized to the Z-line but unlike alpha1, alpha2 localized to the periphery of the myotubes. Preliminary location studies of the alpha proteins in a variety of murine tissues including, kidney, liver, spleen and lung will also be presented.

EFFECTS OF RACE AND ETHNICITY ON ATTRACTIVENESS RATINGS AND INDIVIDUAL'S PHYSICAL ATTRACTIVENESS STEREOTYPE

Aaron Karst (Psychology)
Edison Perdomo, Faculty Mentor (Psychology)

The purpose of this research project was to investigate if ethnicity can influence the "physical attractiveness stereotype". The physical attractiveness stereotype can best be described as people's tendency "to ascribe socially desirable personality traits to individuals who are considered to be more attractive, seeing them as more sociable, poised, and well adjusted than those who are less attractive." Specifically, the study was conducted to determine if ethnicity plays a role in influencing this stereotype. Students were given a series of cards, each with four pictures on them and were asked to match certain personality traits (some positive and some negative) to the pictures that were presented on the cards. The pictures on the cards actually represented people of varying attractiveness and ethnicity. Data were collected and analyzed to determine if ethnicity can in fact influence the physical attractiveness stereotype. These findings suggested that ethnicity can influence the stereotype, but the degree to which it is influenced needs to be further investigated. Further research is also necessary to clarify the role in which ethnicity plays in the physical attractiveness stereotype.

A COMPARATIVE ANALYSIS OF DATA MINING TECHNIQUES USING HEALTH CARE DATA

Obede Matayo (Computer and Information Sciences)
Sarah Klammer, Faculty Mentor (Computer and Information Sciences)

The Open Door Health Center is a clinic that provides health care services to the underserved in south central Minnesota. This includes uninsured and underinsured people primarily in Region 9. These patients may have unique health care needs that have not been identified in the past. Data mining is useful for identification of hidden trends in data and has been used to evaluate data that have been collected about the patients seen at the clinic. This research project has explored and compared the results of two data mining techniques, using patient demographics and social history for the standard data set. The techniques that will be discussed included Supervised Learning and Unsupervised Clustering as used to search for hidden trends in the data set. The knowledge gained from the data mining session is given as a model or generalization of the data.

DETERMINING STAR FORMATION HISTORY IN GALAXIES USING PCDM'S AND PIXEL MAPS

Andy Monson (Physics and Astronomy)
Paul Eskridge, Faculty Mentor (Physics and Astronomy)

Images of galaxies taken from the Hubble Space Telescope in the Ultraviolet (U = 300nm) and Infrared (I = 814nm, H = 1600nm) wavelengths were aligned and compared to determine areas of ongoing star formation and areas with only old stellar populations. By comparing the intensity of light at different wavelengths it is possible to study the history of star formation. Only massive young stars emit strongly in the blue end of the spectrum while the red end of the spectrum is typically dominated by an old stellar population. Taking individual pixels in an image and comparing them to corresponding pixels in a different wavelength allows the creation of a pixel color-magnitude diagram (pCMD). The x-axis is a color index typically bluer minus redder (i.e. U-I) and the y axis is a magnitude scale usually in the bluer color (i.e. U). In galaxies with unresolved stars, each pixel represents a region of space within the galaxy dominated by whatever source is present in that region. The pCMD essentially breaks down the galaxy (pixels) into regions containing new structure and old structure. Separating the pCMD into regions and then plotting the pixels associated with the associated region on an x-y coordinate system produces a map of the galaxy color coded to the regions separated in the pCMD. These maps are useful tools in understanding galactic evolution and morphology. Generated pixel maps and pCMD's for selected galaxies will be presented.

A SURGICALLY INDUCED LOW ALDOSTERONE MODEL

Elizabeth Muellenbach (Biological Sciences)
Jessica Beadell (Biological Sciences)
Penny Knoblich, Faculty Mentor (Biological Sciences)

The three layers of the adrenal cortex each produce a single hormone, which are, from the outer layer inward, aldosterone, corticosterone, and androgens. Corticosterone is important in maintaining a normal immune system, blood glucose, and function of multiple tissues. Aldosterone has been shown to play a role in hypertension (high blood pressure) by increasing the retention of sodium. The role of aldosterone in hypertension has been previously studied using receptor blocking agents, or via complete adrenalectomy (removal of both adrenal glands). Receptor blocking agents produced impaired fetal development in rats. Complete adrenalectomy removes all adrenal hormones, and often results in death. Replacement via infusion pump of corticosterone fails to adapt corticosterone secretion to the body's needs. We are attempting to develop a surgically induced low aldosterone model for the study of hypertension, that preserves the function of the lower adrenal layers. Methods: Wistar Koyoto rat (WKY) males (4-8 weeks of age) were randomly subjected to either a sham (incisions were made and closed) or experimental surgery, in which the right adrenal gland was completely removed, and the outermost layer of the left adrenal cortex was destroyed by freezing. Following recovery from surgery, blood was drawn at 2, 4, and 8 weeks post surgery. Plasma levels of corticosterone were assayed using an enzyme linked immunoassay (ELISA), and aldosterone will be determined using a radioimmunoassay. We predict that there will be a conservation of corticosterone secretion, but that aldosterone levels will be very low.

MORPHOLOGICAL CHARACTERIZATION OF TRANSGENIC MURINE MYOCARDIUM.

Peter Polski (Biological Sciences)
Marilyn C. Hart, Faculty Mentor (Biological Sciences)

In striated muscle, actin capping protein (CP) binds to the barbed end of the actin filament at the Z-line. Capping proteins direct and maintain the proper orientation of the thin filament in the sarcomere. Capping protein is a heterodimer composed of both α and β subunits. In vertebrates, there are three α isoforms (α1, α2, α3) and three β isoforms (β1, β2, β3). In previous studies, transgenic mice were generated that replace the β1 isoform of CP (the specific isoform of the sarcomere) with the ?2 isoform of CP (the non-sarcomeric isoform) using the cardiac-specific promoter of the α-myosin heavy chain (α-MyHC) gene. The α-MyHC promoter turns on at birth, increasing expression as a function of age. The purpose of my research is to characterize the structural abnormalities of transgenic murine myocardium expressing forms in CPs defective in their attachments to the thin filaments of Z lines. Murine hearts, both transgenic and wild-type, ranging in age from 3-12 months were removed and their gross morphology assessed. The hearts were fixed in 10% buffered formaldehyde, dehydrated through a graded series of ethanol washes and embedded in paraffin. Thin sections of the paraffin embedded tissue were prepared using a microtome and collected onto gelatin coated slides. The tissue sections were then stained with hematoxylin and eosin and visualized by transmission brightfield microscopy. Preliminary results confirm that morphological defects increase in both magnitude and frequency as a function of age.

GST PULLDOWN ANALYSIS: IDENTIFICATION OF INTERACTIONS BETWEEN CPβ1/CPβ2 AND NOVEL PROTEINS

Steve Sullivan *(Biological Sciences)*

Marilyn Hart, Faculty Mentor (Biological Sciences)

Actin capping protein (CP), a heterodimer composed of α and β subunits, binds the barbed ends of actin filaments and regulate actin's specific binding affinities. Similar forms of the β subunit (β1, β2, and β3), encoded by one gene, have been identified. Alternative splicing confers variation in the C terminus region of the β1 and β2 isoforms. Although the N terminus of CP β proteins are necessary for actin binding, the role of the variable C terminus regions remains undefined. Prior research, preformed by the primary investigator of this study, suggests that the β1 isoform is essential for attaching actin filaments to the Z-line of heart tissue, and the β2 isoform organizes actin at the intercalated discs of heart tissue. Thus, CP contributes to cardiac function and accordingly, mutations in CP become suspects in the causation of heart disease. We hypothesize that CP β1 and β2 interact with novel proteins at their C terminal ends and these interactions define their different roles in organizing actin filaments in the myocardium. The purpose of this study is to identify novel proteins that interact with the β1 and β2 subunits using Glutathione-S-Transferase (GST) pulldown analysis. The gene encoding the β1 and β2 proteins has been inserted into the expression vector pGEX-3X, allowing the generation of GST-β1 and GST- β2 fusion proteins. The fusion protein is currently being used to bind proteins interacting with the β subunits using the GST as an anchor. If successful, the GST- β complexes will identify proteins interacting with the CP β subunits.

ETHANOL HYBRID

Andy Tan, Ahmed Shebe, Dai Wakahoi, George Luna, Kazumasa Hirasawa (Automotive Engineering Technology)

Paul Sullivan, Faculty Mentor (Automotive Engineering Technology)

We are attempting a fuel system conversion of a Toyota Prius hybrid from gasoline to 85% ethanol. The Toyota Prius has been supplied by the CREED (Communities for Responsible Energy and Environmental Demonstration) organization for evaluation. The purpose of this project is to research and develop the Prius for the optimum level of ethanol by conducting tests of emission and performance at different ethanol concentration levels.

At this point, we have completed the practice test with MSU E-85 vehicle, a Chevrolet Malibu. We used the Malibu for the FTP (Federal Test Procedures) drive trace purposes. When we had the Toyota Prius, we tuned up the vehicle to manufacturer specification. We collected the baseline emission data to be compared in the future to the ethanol result. The latest development was to have the Prius run well with E-32 on idle.

We are planning to run the Prius under load on Mustang Dynamometer to find out the level of ethanol the vehicle will reject. The goal is to discover the maximum amount of ethanol can be consumed by the stock vehicle. If the time permits, we will convert it to E-85.

SPATIAL INTELLIGENCE AND THE ABILITY TO COMPREHEND AND EXECUTETEXTUAL/GRAPHICALINSTRUCTIONS

Anthony Wacholtz (Technical Communication)
David Engen, Faculty Mentor (Speech Communication)

Performing a task such as solving a Rubik's cube can be very difficult, but it can be done after enough twists and turns. However, only an individual with extremely high spatial intelligence could be expected to solve a Rubik's cube in his or her head. Discussing the concept of spatial intelligence, Howard Gardner makes it clear that "...Spatial intelligence is closely tied to, and grows directly out of, one's observations of the visual world." The term spatial intelligence, as it pertains to my research, derives from the ability to visualize and manipulate three-dimensional objects in your mind. In this experiment, I tested approximately 100 college students on two things: 1) their spatial intelligence, and 2) their ability to comprehend and execute a specific set of instructions. I used a standardized spatial test to gauge their spatial abilities. The students then had to complete an origami using one of three types of instructions: textual, graphical, or a combination of the two. Comparing the results between the three instructional mediums, I found a relationship between spatial intelligence and the ability to comprehend textual/graphical instructions.

NISIN RESISTANCE OF *BACILLUS CERUS*: PREPARATION OF NISIN

Peter Weber (Biological Sciences)
Dorothy Wrigley, Faculty Mentor (Biological Sciences)

Nisin is a peptide that is made by the bacterium *Lactococcus lactis*. It is a small molecule that kills gram positive bacteria by binding to their membrane and by disrupting the proton motive force. *L. lactis* was grown in five different mediâ (BHI, BHI + 1% glucose, BHI + 1% sucrose, BHI + 3% yeast extract, and skim milk medium). Samples of nisin from these media were filter-sterilized and tested for their ability to inhibit the growth of *Lactobacillus viridescens*, which is susceptible to nisin. It was found that nisin from the media BHI + 3% yeast extract after 8 hours of growth has the same concentration as the standard, which was 1000 µg/ml. The nisin was then purified. An extraction process using ammonium sulfate was used to precipitate nisin out of the media. It was found that a 50% ammonium sulfate concentration precipitated out all of the nisin. The nisin was dialyzed against distilled water to remove the salts. The Minimal Inhibitory Concentration (MIC) of the extracted nisin, using *Bacillus cereus* and endospores, was equivalent to a commercial nisin preparation at 1000µg/ml.

INDEX OF STUDENT AUTHORS

INDEX OF STUDENT AUTHORS (continued)

INDEX OF STUDENT AUTHORS (continued)

INDEX OF MENTORS

INDEX OF MENTORS (continued)